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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,071	09/19/2006	Hidetoshi Ito	112857-608	3798

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K&L Gates LLP
P. O. BOX 1135
CHICAGO, IL 60690

EXAMINER	
LACLAIR, DARCY D	

ART UNIT	PAPER NUMBER
1796	

NOTIFICATION DATE	DELIVERY MODE
10/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

chicago.patents@klgates.com

Office Action Summary	Application No.	Applicant(s)	
	10/599,071	ITO ET AL.	
	Examiner	Art Unit	
	Darcy D. LaClair	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8 and 10-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8 and 10-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections, except for those maintained below are withdrawn in light of the amendment filed on **6/22/2009**.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The new grounds of rejection set forth below are necessitated by applicant's amendment filed on **6/22/2009**. In particular, **Claim 8** has been amended to recite that the stimuli responsive polymer hydrogel comprises a water insoluble polymer and a stimuli-responsive polymer. This limitation was not present in the claims at the time of the preceding Office Action. Support is noted on page 6, par 4 of the specification. Additionally, ***new* Claims 15-24** have been added. **Claim 15** is supported by previous Claim 10, **Claims 16-17 and 21-22** are supported at p. 9 par 6, **Claim 18** is supported by original Claim 11, **Claim 19-20 and 23-24** are supported at p. 10 par 3.

Thus, the following action is properly made **FINAL**.

Claim Rejections - 35 USC § 112

2. **Claims 19-20 and 23-24** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

These claims require a volume ratio of the water-insoluble polymer to the monomer having a stimuli-responsive functional group. The stimuli-responsive polymer changes volume on the basis of a stimulus. It is not clear whether the volume ratio

applies to the stimuli-responsive monomer content when the stimuli-responsive polymer is in the swollen (large volume) or unswollen (small volume) state. It is suggested that the claim language and the record should clarify this point. In the interest of compact prosecution, these claims are nevertheless addressed below on the basis of the unswollen state in which the monomers would be prior to any processing.

Claim Rejections - 35 USC § 102

3. **Claims 8, 11, 14 and 18** are rejected under 35 U.S.C. 102(b) as being anticipated by **Wu et al. (US 2002/0001571)**.

The rejection of Claims 8, 11 and 14 is adequately set forth in **paragraph 2** of the office action mailed **3/20/2009**, and is incorporated here by reference.

With regard to the *amendment* to Claim 8, Wu discloses a system containing stimuli-responsive particles and at least one other polymer. (See par [0011]) The other polymer is one which strengthens the mechanical strength of a responsive component, and acts as a matrix to increase the response rate. This is a non-swellable hydrophobic (water insoluble) polymer. (See par [0012]) With regard to the absence of a crosslinking point, first, Wu disparages existing membrane systems prepared by chemical reactions such as crosslinking, (see par [0007]) which is different from the disclosed invention. Wu teaches that the stimuli-responsive particles are dispersed in a polymer which is poured into a mold and allowed to dry or melted and cooled. (See par [0041]) This is not a crosslinking process.

With regard to Claim 18, Wu teaches that the polymer particles respond to stimuli such as pH change. (See abstract) Wu discloses an example which releases drug solution by changing volume with temperature. (See par [0006]) Wu teaches that the preferred stimuli-responsive polymer is swellable (or volume changing) (see par [0013]). Wu exemplifies a particle diameter change with temperature (see par [0052], Fig 1), and a pH responsive permeation change (see par [0065]). This suggests that a pH responsive diameter (volume) change is expected.

4. **Claims 8, 11, 14, 16, 18 and 23-24** are rejected under 35 U.S.C. 102(b) as being anticipated by **Cleary et al**. (**US 2003/0170308**).

The rejection of Claims 8, 11 and 14 is adequately set forth in **paragraph 3** of the office action mailed **3/20/2009**, and is incorporated here by reference.

With regard to Claim 16, Cleary teaches that a preferred use of the hydrogel composition is in wound dressings, as well as numerous other uses. (See abstract) Wound dressings are expected to be used at approximately room temperature, as it is not expected that these would be routinely heated or cooled to extreme temperatures.

With regard to Claim 18, Cleary teaches that acrylate containing compositions can generally provide swelling in the range of about 400% to 1500% upon immersion of the hydrogel compositions in water or other aqueous liquid, and the ratio of acrylate to hydrophilic polymer can be selected so the extent of swelling has a pH dependence. (See par [0116])

With regard to Claim 23-24, Cleary teaches a relative amount of each component as 30-40 wt% water swellable polymer, 25-30 wt% hydrophilic polymer, and 30-35 wt% plasticizer (see par [0112]-[0115]) and employs examples falling within this range. (See par [0193], [0202],[0212], etc.) In the unswollen state the polymers would have similar densities, in as far as it is reasonable to expect that a volume ratio could be approximated based on the weight ratio. Therefore a ratio on the order of 70:30 to 60:40 (or 100:42.9 to 100:66.7) could be predicted for the unswelled components. This falls within applicant's instantly claimed ranges.

5. **Claims 10, 15, 17 and 19-22** are rejected under 35 U.S.C. 102(b) as being anticipated by **Cleary et al.** (**US 2003/0170308**) with ***evidence*** provided by **Kraton Labels (2009)**.

The rejection of Claim 10 is adequately set forth in **paragraph 4** of the office action mailed **3/20/2009**, and is incorporated here by reference.

With respect to *new* Claim 15, since the particular limitation involved is the same as the one described in claim 10, attention is drawn to the discussion of **Claim 10**, in paragraph 4 of the office action mailed 3/30/2009.

With regard to Claim 21, Cleary teaches that a preferred use of the hydrogel composition is in wound dressings, as well as numerous other uses. (See abstract) Wound dressings are expected to be used at approximately room temperature, as it is not expected that these would be routinely heated or cooled to extreme temperatures.

With regard to Claim 17 and 22, attention is first drawn to the discussion of **Claim 10**, in paragraph 4 of the office action mailed 3/30/2009. Based on the combination of Kraton SIS copolymer and a SBS copolymer, the hydrophobic, water insoluble polymer portion of the composition would have a glass transition temperature which is well below room temperature. As room temperature is on the order of 20°C-25°C, the glass transition temperature of the hydrophobic component is expected to be below about 20°C.

With regard to Claim 19-20, Cleary teaches a relative amount of each component as 30-40 wt% water swellable polymer, 25-30 wt% hydrophilic polymer, and 30-35 wt% plasticizer (see par [0112]-[0115]) and employs examples falling within this range. (See par [0193], [0202],[0212], etc.) In the unswollen state the polymers would have similar densities, in as far as it is reasonable to expect that a volume ratio could be approximated based on the weight ratio. Therefore a ratio on the order of 70:30 to 60:40 (or 100:42.9 to 100:66.7) could be predicted for the unswelled components. This falls within applicant's instantly claimed ranges.

Claim Rejections - 35 USC § 103

6. **Claims 8 and 10-24** are rejected under 35 U.S.C. 103(a) as being anticipated by **Turner et al**. (**US 6,331,578**).

The rejection of Claims 8, 11 and 14 is set forth in **paragraph 5**, and the rejection of Claims 10 and 12 is adequately set forth in **paragraph 6,** of the office action mailed **3/20/3009**, and is incorporated here by reference.

With regard to *amended* Claim 8, Turner teaches that a preferred embodiment of the present invention is preparation of bicontinuous hydrophilic-hydrophobic IPN membranes having a uniform composition, where the hydrophobic component is the host network and the hydrophilic component is the guest network. (See col 9 line 12-20) Turner specifically teaches polymerization and crosslinking of ***polymerizable*** reactant. (See abstract) Turner teaches that semi-IPNs can be prepared in which one or more of the polymer components remains linear. (See col 9 line 30-31) While Turner does not explicitly disclose which of the components remains linear, it would be obvious to one of ordinary skill in the art that the hydrophobic polymer, one of only two possible choices, would be the component which is not crosslinked. Furthermore, the functionality of a hydrophilic hydrogel polymer is based in the crosslinked structure which allows the polymer to expand to many times the dry size. Therefore it would be obvious to one of ordinary skill in the art, when working with a hydrogel system, to employ the hydrophobic component as the linear (or un-crosslinked) component. A linear, or un-crosslinked component, as it is not crosslinkable, would not be crosslinked.

With regard to Claim 15, since the particular limitation involved is the same as the one described in claim 10, attention is drawn to the discussion of **Claim 10**, in paragraph 6 of the office action mailed 3/30/2009.

With regard to Claim 16 and 21, the IPN are used to prepare drug delivery membranes, wound healing dressings, coatings for medical devices, and contact lenses. These are used at approximately room temperature, as it is not expected that these would be routinely heated or cooled to extreme temperatures.

With regard to Claims 17 and 22, Turner teaches that the host polymer network should be an elastomeric polymer network because the when the material is used as a stimuli-responsive material, the host polymer network must expand and retract to accommodate the volume changes in the hydrophilic component. (See col 10 line 56-60) It is preferred that the hydrophobic polymer be elastomeric. (See col 11 line 11-12) This is consistent with a polymer having a rubbery characteristic. It would be obvious to one of ordinary skill in the art to select a hydrophilic polymer having a low glass transition temperature, such that the elastomeric/rubbery characteristic be maintained at the working temperature, rather than undergoing glass transition and becoming crystalline and brittle, which would be contrary to Turner's teaching for an elastomeric polymer. As room temperature is on the order of 20°C-25°C, the glass transition temperature of the hydrophobic component is expected to be below about 20°C in order to maintain the required elastomeric property at the working temperature.

With regard to Claim 18, since the particular limitation involved is the same as the one described in claim 11, attention is drawn to the discussion of **Claim 11**, in paragraph 6 of the office action mailed 3/30/2009.

With regard to Claims 19-20 and 23-24, Turner teaches that the hydrophobic to hydrophilic ratio in the dry material (or in the non-swelled state), in a preferred embodiment, varies from 9:1 to 1:9, more typically in the range of 8:2 to 5:5. (See col 12 line 41-52) This is consistent with a ratio of water-insoluble polymer (hydrophobic) to stimuli-responsive component (hydrophilic) of 100:1.11 to 100:90, more typically 100:25 to 100:100. This encompasses and/or overlaps with applicant's instantly claimed

ranges. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)

Response to Arguments

7. Applicant's arguments filed **6/22/2009** have been fully considered. Specifically, applicant argues

(A) Applicant's have amended Claims 10-11 to correctly depend from Claim 8,

(B) Claim 10 was rejected because the Patent office alleges that the term "working temperature" is unclear; several examples are provided of hydrophobic polymers with varying glass transition temperatures; which polymer hydrogel is selected using certain glass transition temperatures will depend in the working conditions of the polymer actuator into which that polymer hydrogel is used; The fact that the working temperature is not specified does not make the claim indefinite; the claim language sets forth a specific limitation: the correlation between working temperature and glass transition temperature, and defines a specific characteristic of the water insoluble polymer at that temperature; the rubbery characteristic as described within the specification that imparts high break strength to the polymer hydrogel; one of ordinary

skill in the art would understand that a polymer hydrogel used in a warmer environment may utilize a material with a higher glass transition temperature than one that operates at a colder temperature, applicants thus assert the claim is not indefinite and request the rejection be withdrawn,

(C) Wu does not teach each and every aspect of the claimed invention; Wu teaches that nanoparticles can be used in a membrane system to create valves that can change in size and that the change in size will form channels in response to the stimuli; this does not indicate the creation of a hydrogel with both a stimuli-responsive polymer and a water insoluble polymer, as required by the claims; furthermore, the product does not disclose the claimed overall hydrogel material which will change in size via absorption and desorption of water in response to a stimuli; instead, the nanoparticles may be embedded within membranes; Wu *does* teach crosslinking within the nanoparticles, specifically, exemplary nanoparticles are prepared using a crosslinking agent, N,N'-methylenebisacrylamide; the Patent Office extrapolates that crosslinking is not present from a single paragraph teaching crosslinking, grafting, or radical polymerization; Wu allegedly overcomes the limitation, and must therefore not have crosslinking present in the process; the argument fails because Wu does describe crosslinking; moreover the assertion that the prior art contains some element does not prove that the converse is true; specifically, it does not prove that the disclosure does not contain crosslinking;

(D) Cleary does not meet the limitation with regard to a crosslinking point, because Cleary teaches that the hydrophobic polymer that forms the phase separation

structure is crosslinked. ("For most applications, the crosslinked hydrophobic polymer should have a sufficiently high degree of crosslinking..." Cleary, [0059]) The hydrophobic polymer of applicants must be both the phase separation structure and also not crosslinked; therefore the hydrophobic polymer of [0059] is the relevant structure, not the un-crosslinked plasticizer; Second, the plasticizer is used within the hydrophobic phase in combination with the crosslinked hydrophobic polymer; no teaching or suggestion indicates that the plasticizer is applied in the absence of the crosslinked polymer; in effect, the rejection asserts that the plasticizer and the hydrophilic polymer can be used in the absence of the hydrophobic polymer, which is clearly contrary to Cleary's teachings; the hydrophobic polymer is present and is a critical part of the material,

(E) The Kraton Labels (2009) website used in combination with Cleary is relied upon to prove that a styrene isoprene plasticizer combined with styrene butadiene styrene copolymer will provide low glass transition temperatures; as a general rule, just because two polymers contain the same component monomers does not provide proof that the two polymers are the same; Moreover, the evidence does not resolve the above issues discussed with respect to Cleary,

(F) Turner was used to reject claims 8, 11 and 13-14 under 102(b), but Claim 9 was not rejected, therefore the 102(b) rejection, so the rejection is moot in view of the amendment to the claims incorporating the subject matter of Claim 9; however Claims 9. 10, and 12 are rejected under 103(a) as being unpatentable over Turner; Turner teaches semi-interpenetrating networks where one or more of the polymer components

remains linear; however nothing within Turner provides an enabling disclosure for the Claims at issue; Turner teaches crosslinking as applied to a very specific preparation of IPNs; the disclosure attempts to overcome problems associated with preparing IPNs of bicontinuous hydrophobic/hydrophilic IPN membranes; to do so, the IPNs are created by mixing solutions of two components and a crosslinker on a surface that minimizes surface segregation of the incompatible components and effects polymerization of the components in the presence of the crosslinker; polymerization and crosslinking takes place in the IPN; Turner very clearly teaches that the crosslinking is required to control the nature of the IPNs created in it; nothing teaches or suggests that the IPNs of turner would or should be created without crosslinking;

(G) Claim 14 is rejected based on the rationale that the preamble of Claim 14, a polymer actuator, is not a limitation to the claim; applicants disagree; in addition to the discussions above, Claim 14 is patentably distinct because nowhere in the references is described an actuator using the claimed hydrogel; the actuator is discussed several places within the specification, requiring such features as high breaking strength and fast responsiveness, and the ability to apply force by contraction or expansion, thus the preamble is significant because it breathes life into the claim by defining the reasons for creating the claimed hydrogels having high elasticity and stimuli-responsiveness.

8. **With respect to argument (A),** applicant's arguments have been considered and the 112, second paragraph rejection of Claims 10-11 has been withdrawn ***in light of applicant's amendment.*** Support for the amendment is acknowledged, as the

amendment merely corrected claim dependency. The rejection of Claim 9 has been withdrawn in light of the cancellation of Claim 9.

With respect to argument (B), applicant's arguments have been considered and are **persuasive**. Upon reconsideration, the examiner finds that the claim language as recited presents a relationship between the working temperature of the hydrogel and the glass transition temperature and characteristics of the water-insoluble polymer, namely that the polymer selected should have a glass transition temperature lower than the intended working temperature of the hydrogel. Thus the 112 rejection of Claim 10 is ***withdrawn***.

With respect to argument (C), applicant's arguments have been considered but are ***not* persuasive**. Applicant requires that the ***water-insoluble polymer*** which is the phase separation structure is without a crosslinking point. Applicant identifies that the nanoparticles are prepared using a crosslinking agent, N,N'-methylenebisacrylamide; This is used in a aqueous dispersion polymerization process to prepare the stimuli-responsive polymer (see par [0047]), however this is NOT applicant's water-insoluble polymer which is required to be without a crosslinking point. In the method, the microparticles which are the stimuli responsive polymer are dispersed in the water-insoluble polymer, which is allowed to dry. This is not a crosslinking step with regard to the water-insoluble polymer. Contrary to applicant's assertion, Wu does not, in fact, describe crosslinking for the water-insoluble polymer. With regard to applicant's assertion that the creation of a hydrogel with both stimuli-responsive polymer and water insoluble polymer is not taught by Wu, this is not accurate. Wu specifically teaches that

the invention can be applied to "systems comprising a swellable hydrogel and a non-swellable hydrophobic polymer." (See abstract) The method of Wu creates a membrane composite having both the stimuli-responsive polymer and the water insoluble polymer, which creates valves that change in size. This is consistent with a polymer capable of changing its degree of swelling and/or volume in response to a stimulus. With regard to the change in ***overall*** volume of the hydrogel material, this is not required by the instant claims. First, the claims require that the polymer hydrogel is capable of changing its degree of swelling and/***or*** volume in response to a stimulus. Based on this claim language, a change in degree of swelling ***OR*** volume is required, and the composite of Wu displays a change in degree of swelling. A change in volume of the nanoparticles within the composite is also observed. With regard to applicant's allegation that Wu does not teach a change in size via absorption and desorption of water in response to a stimuli, it is noted that Wu characterizes the swelling ratio was determined by measuring the weight of dry and wet membranes which had equilibrated with the media at various temperatures. (See par [0057]) This indicates that the polymer alters its swelling ration and water content based on the temperature (stimulus). The pH responsive functions are also measured in the presence of water. (See par [0062,],[0065]). Specifically, the pH responsive nature is measured in the presence of solutes in water.

With respect to argument (D), applicant's arguments have been considered but are ***not*** **persuasive**. Cleary discloses a hydrophobic phase which is 29.12 wt% styrene plasticizer, 12.13 wt% SIS Vector, which is also a styrene based plasticizer, (total 41.25

wt%), 9.70 wt% Regalite, a hydrocarbon based resin, and only 9.70% Kalar, which is crosslinked. The largest component of the hydrophobic phase is the styrene plasticizer. The hydrophobic phase is the phase separation structure; therefore the styrene is the largest component of the phase separation structure. As the language of the claim is currently "comprising" there is nothing that precludes a hydrophobic polymer with a cross-linking point from being present in the composition, rather it is only required that a polymer without a crosslinking point be present. This requirement is met by the largest component, the styrene, having no crosslinking point, present in the hydrophobic phase. Furthermore, the crosslinked Kalar product has been crosslinked prior to use, therefore it does not have a crosslink point available, so it technically reads on the claims as recited. With regard to applicant's assertion that the rejection asserts using the plasticizer in the absence of the hydrophobic polymer, as the language is open, this is not accurate. The rejection merely asserts that the composition of Cleary contains a water insoluble polymer as a phase separation structure which has no crosslinking point.

With respect to argument (E), applicant's arguments have been considered but are ***not*** **persuasive**. Cleary teaches specifically that the Kraton D SIS and SBS and Vector polymers available for Exxon (see par [0062]) are preferred commercially available elastomers for use in the invention. The Kraton polymers, The SIS and SBS Vector as well as the Kraton polymer are employed in the examples in the same role and together. (See par [0178]) This demonstrates that the polymers are considered equivalent and interchangeable. In fact, Cleary uses both the Kraton polymers

discussed in the Kraton literature as well as the Vector polymers in the examples. (See par [0176]-[0178]) It is therefore reasonable for one of ordinary skill in the art to expect that any of these plasticizers would have the same function, namely to lower the glass transition temperature, as that taught by the Kraton product literature.

With respect to argument (F), applicant's arguments have been considered but are ***not* persuasive**. Although applicant has argued that nothing teaches or suggests that the IPNs of Turner would or should be created without crosslinking; this is not accurate. While turner does teach that crosslinking is important to control the nature of the IPN, Turner specifically teaches polymerization and crosslinking of ***polymerizable*** reactant. (See abstract) Turner further teaches that semi-IPNs can be prepared in which one or more of the polymer components ***remains linear***. (See col 9 line 30-31) Because the fundamental nature of hydrophilic hydrogel polymer is based in the crosslinked structure which allows the significant expansion of the hydrogel, it would be obvious to one of ordinary skill in the art for the non-swellable member of the semi-IPN to be the linear component. Furthermore, Turner teaches that the components may be monomers, prepolymers, or polymers, or a mixture of polymer networks, (see col 7 line 5-15) and teaches that additional polymers may be present during formation of the IPN. (See col 7 line 4-5) In combination with Turner's teaching of IPNs having a linear component, it would be obvious to one of ordinary skill in the art to maintain a linear, or un-crosslinked component. That Turner addresses a specific problem associated with the preparation of bicontinuous IPNs does not prevent Turner from reading on the claims at issue; rather whether or not Turner discloses a polymer hydrogel and method

for producing a hydrogel consistent with the claims is the point at issue. As Turner presents strong motivation within the body of the single reference to prepare such a hydrogel, the rejection is maintained.

With respect to argument (G), applicant's arguments have been considered but are ***not* persuasive.** First, applicant refers to the discussion of the actuator in the specification. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., high breaking strength, fast responsiveness, the ability to apply force by contraction or expansion) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993) Furthermore, "actuator" has a large variety of definitions in the art. Based on the specification, an actuator appears to be a feature which can drive motion. Gel actuators are those which swell with water using stimuli-responsive features. (See p. 4 par 4) The stimuli-responsive compositions disclosed in the applied prior art have the feature of swelling with water. Furthermore, these compositions have embodiments in which the composition is used to apply a driving force by a change in configuration, shape, volume, or water-retention in response to a force, which is an actuating function. This is consistent with the requirements of the stimuli-responsive actuators described by the specification, as well as consistent with recognized definitions of actuators. Furthermore, applicant's claim fully and intrinsically sets forth the limitations, which are met by the prior art, and the preamble merely states an intended use.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Friday 8:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Darcy D. LaClair
Examiner
Art Unit 1796

/DDL/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796